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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,001	01/19/2006	Laurent Labrousse	284320US0PCT	5146

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EXAMINER	
MCDONALD, RODNEY GLENN	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/565,001	LABROUSSE ET AL.	
	Examiner	Art Unit	
	Rodney G. McDonald	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-23* is/are pending in the application.

4a) Of the above claim(s) *21-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. (EP 1 182 174 A1) in view of Greenberg et al. (U.S. Pat. 6,413,581).

Regarding claim 21, Honjo et al. teach a method of preparing a material exhibiting photocatalytic properties comprising a coating comprising at least partially crystallized titanium oxide. (Paragraphs 0013-0016) The process comprises heating a transparent substrate wherein the substrate comprises a coating of titanium dioxide on at least a first face of the substrate to a temperature greater than 600 degrees C and conducting crystallization of the titanium dioxide at the temperature greater than 600

degrees C thereby at least partially crystallizing the titanium dioxide and forming the material. (Paragraph 0013-0016) Honjo et al. teach the temperature is greater than 630 degrees C. (See paragraph 0013, 0017, 0021) Honjo et al. further suggest forming additional films by sputtering in addition to depositing the titanium dioxide film. (Paragraph 0023) Honjo et al. suggest a preliminary baking of the precursory film and the temperature can be set as high as possible so long as it is lower than the softening point of the glass substrate. The bending or tempering step is then performed from about 560 to 700 degrees C. The coating is inherently crystallized due to the temperatures involved. (See Paragraph 0013)

Regarding claim 22, Honjo et al. teach a bending treatment. (Paragraph 0013)

The differences between Honjo et al. and the present claims is that depositing titanium dioxide in anatase form on at least a first face of a glass or glass-ceramic substrate by cathode sputtering is not discussed (Claim 21), the substrate has been provided beforehand with one or more functional multilayers, one or more functional layers or a combination thereof is not discussed (Claim 21), comprising deposition on at least a second face of the substrate of one or more functional multilayers, one or more functional layers or a combination thereof is not discussed (Claim 21), the heating and conducting are conducted after the depositions on at least the first and second faces is not discussed (Claim 21) and the deposition on the at least first and second faces is carried out by cathode sputtering is not discussed (Claim 21).

Regarding depositing titanium dioxide in anatase form on at least a first face of a glass or glass-ceramic substrate by cathode sputtering (Claim 21), Greenberg et al.

teach depositing titanium dioxide on a glass substrate by MSVD (magnetron sputter vapor deposition) in anatase form is desired by sputtering while heating. (Column 3 lines 7-10; Column 3 lines 27-30; Column 3 lines 37-43; Column 4 lines 31-33)

Regarding the substrate being provided beforehand with one or more functional multilayers, one or more functional layers or a combination thereof (Claim 21), Honjo et al. teach titanium dioxide coating being formed by deposition wherein the substrate is glass. (Paragraph 0013-0020) Honjo et al. further suggest forming additional films by sputtering in addition to depositing the titanium dioxide film. (Paragraph 0023) Greenberg et al. teach providing one or more functional layers before deposition the titanium dioxide layer on glass. (Column 9 lines 57-67; Column 10 lines 1-34)

Regarding comprising deposition on at least a second face of the substrate of one or more functional multilayers, one or more functional layers or a combination thereof (Claim 21), Greenberg et al. teach forming titanium oxide on the air side and the tin side of the substrate. (i.e. both sides of the substrate) (Column 8 lines 49-51) Since Greenberg et al. teach utilizing at least one functional layer between the titanium oxide layer and the substrate it would follow that one would provide at least one functional layer on both sides of the substrate since titanium oxide as taught by Greenburg et al. is provided on both sides of the substrate. (Column 9 lines 57-67) Honjo et al. further suggest forming additional films by sputtering in addition to deposition the titanium dioxide films. (Paragraph 0023)

Regarding the heating and conducting are conducted after the depositions on at least the first and second faces (Claim 21), Greenberg et al. teach heating and conducting after depositions of the at least one layer. (See Example 5)

Regarding and the deposition on the at least first and second faces is carried out by cathode sputtering (Claim 21), Greenberg et al. teach the at least one functional layer can be deposited by MSVD (magnetron sputter vapor deposition). (Column 10 lines 33-34) Greenberg et al. also teach the titanium oxide can be formed by MSVD (magnetron sputter vapor deposition). (Column 4 lines 18-21; Column 4 lines 31-33)

The motivation for utilizing the features of Greenberg et al. is that it allows production of a photocatalytically activated self-cleaning coating with no sodium ion migration. (See Abstract; Column 9 lines 57-67)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Honjo et al. by utilizing the features of Greenberg et al. because it allows for producing a photocatalytically activated self-cleaning coating with no sodium ion migration.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Honjo et al. in view of Greenberg et al. as applied to claims 21 and 22 above, and further in view of Krisko et al. (U.S. Pat. 6,964,731).

The differences not yet discussed is the deposition on the at least first and second faces being carried out in line simultaneously or almost simultaneously along substantially identical directions and in opposite senses is not discussed (Claim 23).

Regarding claim 23, Greenberg et al. already discussed teach in line deposition for a CVD process but equates CVD to sputtering for forming titanium dioxide films. (See Fig. 3) Krisko et al. teach in Fig. 5 sputtering in line to form coatings on both faces of the substrate. (See Fig. 5)

The motivation for utilizing the features of Krisko et al. is that it allows for forming coatings on both sides of the substrate. (Column 12 lines 33-36)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the features of Krisko et al. because it allows for forming coatings on both sides of the substrate.

Response to Arguments

Applicant's arguments filed February 4, 2009 have been fully considered but they are not persuasive.

The 35 U.S.C. 102 rejections have been withdrawn.

Response to the arguments:

In response to the argument that Honjo teach that the baking and heat treatment steps do not result in crystallization, it is argued that Honjo teach depositing a titanium oxide coating and thereafter heating the coating within Applicant's desired range. Since the conditions for heating are the same the same result is believed to be achieved (i.e. crystallization of the coating). (See Honjo et al. discussed above)

In response to the argument that Greenburg et al. do not teach heating and crystallization at temperatures above 630 degrees C, it is argued that Greenberg et al. teach heating at "about" 600 degrees C to achieve crystallization. This is interpreted to

be above 630 degrees C. Furthermore, Honjo teach heating above 630 degrees C. While Honjo et al. do not teach crystallization is occurring it is believed that since the conditions are the same for heating that crystallization of the coating must be occurring. (See Greenberg et al. and Honjo discussed above)

In response to the argument that it was unexpected that heat treating above 600 degrees C makes it possible to temper or bend glass without lowering the photocatalytic activity by maintaining the anatase crystalline structure, it is argued that the claims as written require depositing the titanium dioxide film on the substrate in anatase form and then crystallizing after heating at a temperature of greater then 630 degrees C. The crystallization step of the claim does not require the titanium dioxide to be in anatase form. Honjo teach the two steps of heating (i.e. baking and tempering) and therefore inherently crystallizing the film. Furthermore Greenberg et al. teach heating the film to "about" 600 degrees C to crystallize the film. Here "about" is interpreted to be greater then 630 degrees C. While Applicant mentions that heating above 630 degrees C causes the decrease in photocatalytic activity the claims do not require the crystallization step to be in anatase form. (See Greenberg et al. and Honjo et al. discussed above)

In response to the argument that Greenberg do not disclose deposition of low emissivity or solar control layers by sputtering on the other side of the glass but instead teach the deposition of barrier layers under the titanium oxide coating, it is argued that Greenberg teach providing a SIDB coating (i.e. tin oxide) and multilayer coating between the titanium oxide film and the substrate. Since Greenberg teach deposition

titanium dioxide on both sides of the substrate it follows that a SIBD coating (i.e. tin oxide) and multilayer coating can be between the titanium oxide film and the substrate on both sides of the substrate. (Greenberg et al. Column 8 lines 51-52; Column 9 lines 60-62) Furthermore Honjo et al. suggest optical films of oxides or metals between the titanium oxide film and the substrate. (Honjo et al. Paragraph 0023)

In response to the argument that the combination of Honjo and Greenberg are not combinable because they teach very different methods of coating (i.e. sol-gel and sputtering), it is suggested that Greenberg et al. suggest that sputtering suitable for substituting for sol gel methods of manufacturing titanium oxide layers. (Greenberg et al. Column 1 lines 55-67; Column 2 lines 1-12; Column 2 lines 35-55)

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
May 13, 2009